

Notice of Allowability

Application No.

10/791,226

Examiner

Henry S. Hu

Applicant(s)

KAPPLER ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment of September 26, 2005.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. Applicants' **amendment** filed on September 26, 2005 was received. Applicants' **certified copy of priority paper of "FR 03.02531"** for this application filed on September 26, 2005 was also received so as to grant a **foreign priority date of March 3, 2003**. With the amendment, **Claim 4 was amended; non-elected Claims 7-11 were canceled, while no new claim was added**. To be more specific, **Claim 4** was only amended to correct the informality in claim objection as suggested by the examiner.

With respect to **ODP rejection** by Claims 1-6 of copending Application No. 10/791,233 (now **USPG-PUB 2004/0225096 A1**) to **Kappler et al.** (with priority date 3-3-2003), the Applicants have alleged to cancel Claims 1-6 of the copending Application when the present claims are allowed (see page 1 of Remarks). The examiner thereby withdraws claim objection and ODP rejection in the previous Office Action dated June 24, 2005. **Claims 1-6 are now pending**. An action follows.

2. Claim rejections under 35 USC 102 and 103 rejections in previous Office Action filed on June 24, 2005 are now removed for the reasons given in paragraphs 3-9 thereafter.

Allowable Subject Matter

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3. Claims 1-6 are allowed.

4. The following is an examiner's statement of reasons for allowance: The above Claims 1-6 are allowed over the closest references:

5. The limitation of amended parent **Claim 1** of present invention relates to *a process for the manufacture of polyvinylidene fluoride (PVDF) homopolymer or copolymer comprising synthesizing by radical polymerization of vinylidene fluoride (VDF), and optionally of a comonomer, in aqueous dispersion and in the presence of a transfer agent, of a persulphate as radical initiator, optionally of a surface-active additive and optionally of a paraffin wax, in which:*

a) sodium acetate is added, either at the start of or during or after the polymerization,

b) a potassium alkylsulphonate is optionally added after the polymerization,

c) an aqueous PVDF dispersion is obtained,

d) the PVDF is collected by "atomizing the dispersion" obtained in c) with air at a temperature of between 120 and 220 °C, the aqueous dispersion obtained in c) not being washed with water before atomizing.

See other limitations of dependent Claims 2-6.

6. In view of the Applicants' amendment, only dependent Claim 4 is found to correct the informality in claim objection. In a close examination, parent **Claim 1** is

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related to a process to prepare PVDF including homo- and co-polymers, through a combination of four continuous steps (a) – (d), particularly see step (a) by adding sodium acetate and see step (d) by atomizing the dispersion with air and a high temperature of 120-220 °C. The Applicants allege that such obtained PVDF polymers would contain a very low level of surfactant if the atomization step were done at a sufficiently high temperature (see top at page 2 of Remarks).

7. Regarding 102 and 103 rejections being all involved with the use of Blasie as primary reference, the key point is that Blasie does not disclose or suggest using such an atomization step so as to remove surfactant into such a low level (as pointed out by the Applicants). As discussed earlier, the **Blasie** reference only discloses a process for the emulsion polymerization or copolymerization of vinylidene fluoride in the presence of (A) potassium persulfate (free radical initiator), (B) a fluorinated emulsifier, (C) sodium acetate and (D) paraffin. **The polymer is then isolated from the latex by flocculation with sodium chloride in conventional manner and recovered by centrifugation or by simply drying in an oven. No atomization step at such a high temperature is used at all.** Additionally, no extra step to remove residual surfactant is disclosed by Blasie.

8. With respect to the secondary and/or tertiary references including Sharma “109” and Wu “251”, both references do not fix the deficiency of Blasie since no atomization step at such a high temperature is used at all. As discussed earlier, **Sharma** may teach in the course of making various types of vinyl-containing polymers, **a surfactantless**

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polymer latex can be prepared by using a sulfo-polyester stabilizer so that a more durable and lasting coating composition may be resulted since no surfactant is used; while **Wu** may teach in the course of making various PVDF polymers, the alkylsulfonate salt is added in polymerization process. By doing so, such obtained PVDF polymers are alkylsulfonate-modified and are very useful in making polymer electrolyte as matrix polymer component. Therefore, a motivation to link the involved references with Blasie for using atomizing is lacking.

Additionally, the present invention has shown in examples along with some comparative examples for making such a PVDF homo- and/or co-polymer with such a low level of surfactant (see pages 10-15 for **examples 1-7, comparative examples 1-2** along with its **Tables 1-2**). Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest the limitations of present invention.

9. After further examination and search, the examiner found the following prior art did not teach the claimed limitation:

US Patent No. **5,543,259 to Schwarz et al.** only discloses **an atomization step** to spray a composition comprising toner colorant and a coating material (may be a PVDF polymer) with a solvent by means of an air stream onto the airborne carrier particles (column 33, line 66 -- column 34, line 16). **It is not used for purify PVDF polymers**

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so as to remove surfactant. Therefore, Schwarz fails to teach or fairly suggest the process of making PVDF of present invention.

11. The key issue, regarding making PVDF including homo- and co-polymers, through a combination of four continuous steps (a) – (d), particularly **step (d) by atomizing the dispersion with air and a high temperature in the range of 120-220 °C**, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

12. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the independent and parent process **Claim 1** is allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 2-6** are passed to issue.

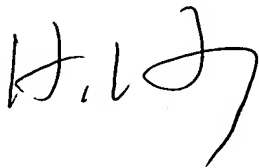
13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the

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organization where this application or proceeding is assigned is (571) 273-8300 for all regular communications.

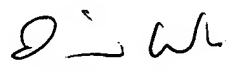
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

Patent Examiner, art unit 1713, USPTO

November 7, 2005



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